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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,378	07/18/2003	Kunal Mukerjee	3382-64472	4367
26119 7590 05/18/2007 KLARQUIST SPARKMAN LLP 121 S.W. SALMON STREET SUITE 1600 PORTLAND, OR 97204			EXAMINER DIEP, NHON THANH	
			ART UNIT 2621	PAPER NUMBER
			MAIL DATE 05/18/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/622,378

Applicant(s)

MUKERJEE ET AL.

Examiner

Nhon T. Diep

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-77 is/are pending in the application.
- 4a) Of the above claim(s) 24-73 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/18/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 04/19/06; 12/05/05; 7/30/04; 02/07/04

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-23 in the reply filed on 2/7/2007 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-8, 10, 13-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Jeon (US 2005/0129120 A1).

Jeon discloses methods of determining a motion vector for deriving motion vectors of a bi-predictive image block comprising the same method of processing images in a sequence of video images, the method comprising: determining a fraction for a current image in the sequence, wherein the fraction represents an estimated temporal distance position for the current image relative to an interval between a first reference image for the current image and a second reference image for the current image (fraction = $\frac{TD\ b}{TD\ d}$); and processing the fraction along with a motion vector for the first reference image, wherein the motion vector represents motion in the first reference image relative to a second reference image for the current image, and wherein the processing the

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fraction along with the motion vector results in a representation of motion in the current image relative to the first reference image (Forward $MV = \text{fraction} \times MV$ and backward $MV = (\text{fraction} - 1) \times MV$; paragraphs 0052-0053 and figure 6A) as specified in claims 1, 13 and 18; wherein the fraction is selected from a set of discrete values, wherein the values are greater than zero and less than one; wherein the fraction is selected from the group consisting of: $1/2$, $1/3$, $2/3$, $1/4$, $3/4$, $1/5$, $2/5$, $3/5$, $4/5$, $1/6$, $5/6$, $1/7$, $2/7$, and $3/7$ (figure 6A shows fraction $TD\ b / TD\ d = 1/2$) as specified in claims 3-4; wherein the estimated temporal position for the current image relative to the interval between the first reference image for the current image and the second reference image for the current image is not the true temporal position of the current image (estimated temporal position may be approximate to convenient fraction for easy computation and therefore it may not be a true temporal position) as specified in claim 5; wherein the fraction is based on motion information for the sequence of video images (fraction = $TD\ b / TD\ d$, whereas $TD\ b$ is the temporal distance from current image to the temporally before reference frame which represents motion) as specified in claim 6; wherein the fraction is based on a proximity of the current image to an end of the sequence of video images (since locations of the reference pictures for the B picture could be at the beginning or the end of the GOP) as specified in claim 7; wherein the representation of motion in the current image comprises representation of variable velocity motion (fraction varies from one B picture to another and as dictated by its temporal distance and temporal distance = velocity motion) as specified in claims 8, 17 and 19; further comprising repeating the acts of claim 1 for plural images in the sequence of video images (there are more than

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one B picture per GOP) as specified in claims 10 and 16; wherein the region is a slice of the current image (paragraph 0013) as specified in claim 14; wherein the region is a macroblock of the current image (paragraph 0027) as specified in claim 15; wherein the scaling the motion vector for the co-located macroblock comprises scaling the vertical component and horizontal components of the motion vector for the co-located macroblock (inherently included) as specified in claim 20; wherein the scaling the motion vector for the co-located macroblock comprises: scaling the motion vector for the co-located macroblock by a factor of the fraction, to obtain an implied forward motion vector for the current macroblock; and scaling the motion vector for the co-located macroblock by a factor of the fraction minus one, to obtain an implied backward motion vector for the current macroblock ($\text{Forward MV} = \text{fraction} \times \text{MV}$ and $\text{backward MV} = (\text{fraction} - 1) \times \text{MV}$; paragraphs 0052-0053 and figure 6A) as specified in claim 21 and addressing a macroblock in the future reference frame using the implied forward motion vector; addressing a macroblock in the previous reference frame using the implied backward motion vector; and predicting the current macroblock using an average of the macroblock in the future reference frame and the macroblock in the previous reference frame (figure 6A) as specified in claim 22.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 9, 11-12 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeon.

As applied to claim 1 above, it is noted that Jeon does not particularly disclose:

- a. wherein the fraction is represented by a variable length code in a bit stream as specified in claim 2;
- b. the determining the fraction comprises: evaluating a set of plural fractions to determine bit costs for encoding the current image using the plural fractions; and selecting a fraction from the set of plural fractions based on the evaluating as specified in claim 9; and
- c. A computer readable medium storing computer executable instructions for causing the computer system to perform the method of claim 1 during video encoding as specified in claim 11; and to perform the method of claim 1 during video decoding as specified in claim 12 or as method step of claim 23.

With regard to a: Since, at the end of the encoding process, information is VLC before sending to the decoding side and therefore, it would have been obvious to one skilled in the art at the time the invention was made to represent the fraction by a VLC before sending to the decoding side to reduce information.

With regard to b: Using different set of fractions to determine the best bit costs before choosing one is well known in the art and therefore, it would have been obvious to one of ordinary skilled to do so as a matter of trade-off between quality and less computation.

With regard to c: The examiner takes Official Notice that using computer software to perform encoding and decoding are well known in the art and therefore, it would have been obvious to one of ordinary skilled to do so to save time.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Tourapis et al (US 7,154,952) discloses timestamp independent motion vector prediction for predictive and bidirectional predictive pictures

b. Hannuksela (US 2003/0142751) disclose coding scene transitions in video coding.

c. Haskell et al (US 6,055,012) discloses a digital multi-view video compression with complexity and compatibility constraints.

d. Wang et al (US 2007/0064801) discloses picture level adaptive frame/field coding for digital video content

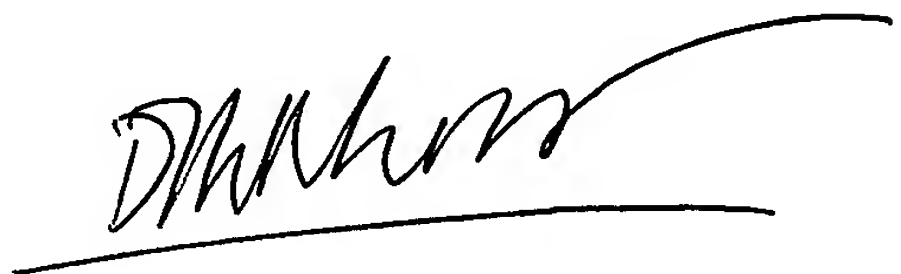
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhon T. Diep whose telephone number is 571-272-7328. The examiner can normally be reached on m-f.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on 571-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ND
4/30/2007

A handwritten signature in black ink, appearing to read 'Dhondie', is written over a horizontal line.

**NHON DIEP
PRIMARY EXAMINER**